

INTERCEPT

Monitoring the trade of exotic animals, wild meat and the pathogens they carry

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Summary

Context

Animals and animal products are imported on a daily basis into Belgium, some legally, some illegally. In Belgium, several government agencies at the federal level are competent to control and document the legal and illegal import of meat, animal products and wildlife and exotic pets. Each agency, however, currently works within its own framework and collects data tailored to its specific needs. A vital part of the action plan towards the fight against illegal import of exotic animals and wild meat, especially with the aim to reduce the risk of importing and spreading zoonotic pathogens, is to obtain a scientific evaluation of the scale and risks of the exotic animal and wild meat trade based on an integrated data collection.

Objectives

INTERCEPT aimed to develop a sustainable workflow for monitoring the import of exotic animals and wild meat into Belgium and its associated health risks. This entailed: mapping the pathways, agencies and existing data sources involved in this trade; designing and building a prototype centralised database with user-friendly data-entry tools; establishing and field-testing standardised protocols for sample and data collection (for both biological researchers and non-researchers); establishing and validating laboratory protocols for DNA-barcoding-based species identification and for unbiased metagenomic pathogen detection; using these to characterise the taxonomic diversity of intercepted meat and the pathogens it carries; and translating all findings into concrete recommendations for decision-support, disseminated to policymakers and stakeholders through dedicated workshops.

Conclusions

The project mapped the full landscape of Belgian import-control agencies and their data sources, identifying substantial fragmentation and formulating source-specific recommendations for harmonisation and digitisation. Building on this, a prototype centralised database was developed, demonstrating that integrating these sources is technically feasible,

though challenged by lack of data harmonisation. We provide a roadmap toward a future harmonised, interoperable and ultimately FAIR database.

Standardised meat sampling and laboratory protocols for animal species identification and pathogen detection were established, tested and disseminated. Applying these, 637 meat specimens were sampled during 28 Baggage Control and 8 luggage-destruction actions (August 2023–December 2024); 569 were identified to species level, of which 24.6% were confirmed as wild meat spanning at least 25 species (17 CITES-listed). Unbiased metagenomic screening of 35 sample pools detected viruses in 88.6%, and viruses of veterinary or zoonotic concern in 74.3% of the pools, including five WOAHA-listed pathogens (African swine fever, avian influenza, Newcastle disease, infectious bronchitis, Peste des petits ruminants). Domestic meat, carried a higher prevalence of these well-characterised pathogens, while the wild-meat virome remains comparatively under-characterised.

The final roadmap towards sustainable monitoring of the import of exotic animals, wild meat and the pathogens they carry is presented to the FPS Health.

Keywords: wildlife trade; wild meat; domestic animal meat; biodiversity; database; DNA barcoding; veterinary diseases; zoonotic disease surveillance; metagenomics